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NATIONAL DEVELOPMENTS

BRIEFS

SHANXI SCIENTIFIC, TECHNOLOGICAL FORCE--In the wake of the development of the national economy and of scientific and technological work, Shanxi Province has built a scientific and technological force of 162,144 cadres. With the efforts of this force, the province has scored achievements in 1,053 items of scientific research. The province has reversed verdicts on 3,192 intellectuals and has promoted 6,749 middle-aged and young scientific and technological cadres to leading posts at all levels; 92 cadres to posts at the prefectural level and 1,498 cadres to posts at the county level. The province has also trained and absorbed into the party 2,943 intellectuals. [Summary] [Taiyuan Shanxi Provincial Service in Mandarin 2300 GMT 30 Sep 83 HK]

SICHUAN SCIENTIFIC ADVISORY GROUP--A ceremony to mark the establishment of the Sichuan Provincial Scientific and Technological Advisory Group took place in Jinjiang Hall yesterday afternoon. Scientific, technological, and economic experts and scholars in natural and social sciences and production and technological management who have been employed by the provincial CPC committee and the provincial government, attended the ceremony. Others attending were responsible comrades of the provincial CPC committee, the provincial advisory committee, the provincial people's congress Standing Committee, the provincial government and the provincial CPPCC committee, including Tan Qilong, Jiang Minkuan, Xu Mengxia, Yang Chao, Liu Xiyao, Wu Xihai, Bai Shangwu, Xu Quan, An Faxiao, Li Zhongyi, Li Linzhi, (Hu Yongkang), (Han Zhengfu), Ma Shitu, (Tang Zhenghuang), Wang Dingyi, Luo Chenglie, Xu Chonglin, Ren Jinglong, and Tian Yiping; responsible comrades of all prefectures, cities, and autonomous prefectures and provincial relevant departments and bureaus who are in charge of scientific and technological work; and responsible comrades of the provincial science and technology committee, the provincial science and technology association, the Chengdu Branch of the Academy of Sciences of China, and the provincial institute of social sciences. Those attending the ceremony totaled some 1,300 people. Liu Xiyao, provincial CPC committee Standing Committee member, presided over the ceremony. Tan Qilong, provincial CPC committee Standing Committee member and chairman of the provincial advisory committee, spoke at the ceremony. Jiang Minkuan, provincial CPC committee deputy secretary and vice governor, also spoke. [Summary] [Chengdu Sichuan Provincial Service in Mandarin 0030 GMT 27 Sep 83 HK]

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APPLIED SCIENCES

SYMPOSIUM ON COMPILATION OF NATIONAL AGRICULTURAL MAP

Beijing DILI XUEBAO [ACTA GEOGRAPHICA SINICA] in Chinese Vol 38 No 1, Mar 83
pp 102-103

[Article by Liao Ke [1675 0344] and Fu Suxing [0265 5126 1840]: "Symposium on the Compilation of National Agricultural Maps Held in Nanning"]

[Text] From 14 to 21 October 1982 the Chinese Geography Society convened in Nanning the first national symposium on the compilation of national agricultural maps since the founding of the nation. The symposium, with attending representatives from 21 provinces (districts) and 47 scientific research, school and production units, received 74 theses. Six of them were read at the symposium, and the others were studied in group discussions. During the symposium, a small-scale agricultural map exhibition was held, about 100 agricultural maps and agricultural photos were displayed.

The following issues were the center of discussion during the symposium:

- (1) The target of service, the direction of map-making and the basic tasks now to the end of this century. How do they suit today's development and how do they serve agricultural modernization?
- (2) How to insure and raise the quality and production speed of agricultural maps? How to strengthen the research on the theory and application of agricultural maps? How to vigorously adopt new technology and new skills?
- (3) How to give full play to the role of agricultural maps and how to further raise their benefits?

Looking back on the development of agricultural maps since the founding of the state, including the farm plans, farm program maps and the resource prospecting maps of remote areas compiled in the early 1950's, the county program maps, county and provincial agricultural regionalization maps, samples of steady production and high production agricultural maps and map series compiled by some research units and higher educational institutes in the 1960's, the restoration of agricultural maps after the destruction of the "gang of four" in 1976, the county and provincial agricultural map series, the economics map series and the recently compiled national agricultural physical factor maps and national agricultural map series, all of these have shown that China's agricultural maps have entered a new stage of development.

Everyone believes that in order to achieve the goal of the national economy by the end of this century, we must solve key agricultural problems. Thus, a new task has been given cartographers, since scientific farming is the key to the realization of agricultural modernization. Agricultural maps are an important means of determining conditions for agricultural production, of carrying out comprehensive analysis and evaluation, of formulating agricultural regionalization, overall production planning and of scientifically supervising and managing agricultural production. Therefore, we must make great effort to develop the compilation of national agricultural maps and research on theories and methods, especially research on topic selection, content, map design and methodology in agricultural maps. The design of agricultural maps should take into consideration the following:

1. The main characteristics of China's national agricultural production and balance of the ecosystem proceed from the comprehensive view of land management, and take grain as the key link to insure an all-round development of agriculture, forestry, animal husbandry, sideline production and fishery. Map topics and content should suit local conditions and be closely integrated with the needs and special features of agricultural production.
2. Agricultural maps should reflect the differences and distribution patterns of the ecological environment.

In selecting map topics, we must pay attention to special regional characteristics and the actual production situation and emphasize their strengths and avoid their weaknesses to develop their advantages. In addition, agricultural maps should pay attention to the establishment of administrative units, compile agricultural maps corresponding to different levels of administrative units, such as commune, first-level village, county, first-level district, first-level province (district), at the present time we should compile county level and provincial level agricultural maps. These maps include: (1) Basic physical factor and land resource maps with water, soil and weather as their major content. (2) Maps of the present agricultural economic condition. (3) Regional agricultural maps (a whole set or series) and basic construction program maps of farmlands.

The key to raising the quality of agricultural maps is: (1) With a definite object in view, analyze and select map indexes and reasonable classifications and categorizations which are productive and have strong aims; (2) Strengthen research on comprehensive agricultural maps. Try to use composition maps or compound maps so that elements can be coordinated, referenced, analyzed and compared with each other; (3) We should make full use of the new techniques of remote sensing and automatic computers to draw maps, this is an important and effective means to accelerate the process of map-making and raise the quality. At the same time, we should, as soon as possible, promote the application of the engraving method and the new technique of mechanization in the drawing of agricultural maps to simplify map-making. In addition, it is suggested that the mapping bureaus of different provinces and districts compile some unified geographical base maps; (4) To raise the quality of agricultural maps, we must strengthen investigation and research on how map users use the maps, and do a good job in the scientific tests of agricultural map series and agricultural map collection.

Bringing into full play the role of agricultural maps and increasing the use are very important issues. Maps are made to be used. Therefore, the proper way to transmit information to map users is the central issue in correctly applying information theory and research on increasing map uses. Thus, cartographers should pay close attention to the needs of map users and develop the feedback role of the user. Strengthening the analysis and evaluation of agricultural maps can unite the cartographers and map users, and encourage map makers and professionals to cooperate to raise the level of analysis and utilization of maps and their results.

Participants of the symposium also agree that national agricultural regionalization and map formulation are very scientific and technological work. In addition to adopting the style of administrative leadership, professional, educational and technological leadership should be strengthened. More specialists should be encouraged to participate, and the support and cooperation of related societies such as the geographic society, survey and drawing society, and agricultural society should be vigorously sought in order to develop their advisory and consultory role.

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NEW SCHEME FOR COMPREHENSIVE PHYSICAL REGIONALIZATION IN CHINA

Beijing DILI XUEBAO [ACTA GEOGRAPHICA SINICA] in Chinese Vol 38 No 1, Mar 83
pp 1-9

[Article by Zhao Songqiao [6392 2646 0829], Institute of Geography, Chinese Academy of Sciences]

[Text] "The occurrence and development of science, from the very beginning, are decided by production." (Engels, "Dialectics of Nature," Chinese edition, People's Publishing House, 1955, p 149) Comprehensive physical regionalization thoroughly reflects the regional differences in the natural world; each comprehensive physical region has its own natural characteristics, formation, development, history, exploitation and transformation patterns which have great great significance in scientific knowledge and guiding production. Therefore, at all times and in all countries, comprehensive physical regionalization is a key topic in geography.

I. A Brief History of China's Comprehensive Physical Regionalization

The study of comprehensive physical regionalization has a long history in China. As far back as 500 B.C., the book, "Yu Gong," divided China into nine regions, each region's landscape, bodies of water, soil and produce were clearly defined. This was undeniably one of the earliest works on physical regionalization. Thereafter, good geographic writings were published one after another. Dynastic histories contained detailed geographic works. Each province, prefecture and county also compiled large volumes of geographic works. According to preliminary statistics, there are about 9,000 different works.

After liberation, because of the need to develop geographic science and agricultural production, national and regional comprehensive physical regionalization work developed rapidly. Up to 1982, there have been six national comprehensive physical regionalization schemes which are of significance:

(A) In 1954, for teaching needs in university geography departments, Prof Lin Chao [2651 6389] and others conducted the first thorough comprehensive physical regionalization. First, the entire country was divided into four large regions based on tectonics, and divided into 10 divisions according to climate. Thirty one regions and 105 subregions were further divided on the basis of landscape.

(B) In 1954, Prof Luo Kaifu [5012 7030 1381] compiled "China's Physical Regionalization" (sponsored by the China Geographic Editorial Department of the Chinese Academy of Science). First, it divided China into east and west. Based on differences in temperature, soil, and vegetation, four "basic regions" were drawn in the eastern half (humid), representing northeastern China, northern China, central China and southern China. Southeast China was recognized as another "basic region." As for the western half, (arid) two "basic regions," namely Mongolia-Xinjiang and Qinghai-Xizang, were drawn based on topography and temperature differences. Based on the 7 "basic regions," 23 "subregions" were then further divided according to topography.

(C) Beginning in 1956, the Physical Regionalization Work Committee of the Chinese Academy of Science initiated a large-scale, comprehensive physical regionalization work. Under the chief editor, Prof Huang Bingwei [7806 4426 4850], and based on the physical regionalization work of different departments, past experiences were summarized and many Chinese and foreign experts' opinions gathered. In 1958, China's comprehensive physical regionalization was compiled. Based on a seven-level unit system, i.e., natural realm, temperature zone, natural region, natural zone, natural province, natural prefecture and natural county (the first two are of zero level, the last two have not been concretely incorporated in China's regionalization), China was divided into three natural realms (the eastern monsoon realm, the Mongolia-Xinjiang Plateau realm and the Qinghai-Xizang Plateau realm), six temperature zones (equatorial zone, tropical zone, subtropical zone, warm temperature zone, temperate zone and cold temperate zone), 18 natural regions and subregions, 28 natural zones and subnatural zones and 90 natural provinces. Among them, natural zones and subnatural zones are the key categorizing units of the whole division scheme. This division emphasized the direct participation of the basic process of the natural world's material and energy exchange. Based on the pattern of physical differences, the principle of grouping regional and nonregional units in the same series was adopted. Units at each level were clearly defined and demarcated. In addition, the major objective of physical regionalization was to serve agriculture.

(D) In 1961, Prof Ren Mei'e [0117 5019 6948] and others gave different opinions concerning the above-mentioned scheme. According to the main contradictions of differences in the natural environment and different patterns of landscape refiguration, China was divided into 8 natural divisions (northeast, northern, central, southern, southwestern, Inner Mongolia, northwest and Qinghai-Xizang), 23 natural regions and 65 natural provinces. The strength of this scheme is the integration of the two patterns, zone and nonzone, in higher level units. "The Outline of China's Physical Geography," published in 1979, provides more detailed explanation on this scheme.

(E) In 1963, Prof Hou Xueyu [0186 1331 3558] and others conducted a comprehensive study on national physical regionalization in order to develop agriculture, forestry, side-line production and fishery. First, based on temperature differences, China was divided horizontally from north to south into six zones and one region (temperate zone, warm temperate zone, semisubtropical zone, subtropical zone, semitropical zone, tropical zone and the Qinghai-Xizang Plateau). Then, according to rainfall, humidity and temperature

conditions, China was divided into 29 natural regions, whose agricultural dispersion, arrangement order, transformation and utilization patterns were also discussed.

(F) In 1980, the investigation commission for national agricultural resources and commission for agricultural regionalization again compiled a national comprehensive physical regionalization scheme in order to provide fundamental information and data for China's agricultural regionalization and agricultural resources evaluation. First, they divided China into three large regions (the eastern monsoon region, the northwestern arid region and Qinghai-Xizang Frigid Plateau region); then, based on temperature conditions, the eastern monsoon region was divided into nine zones (cold temperate zone, moderate temperate zone, north subtropical zone, central subtropical zone, south subtropical zone, frontier tropical zone, central tropical zone and equatorial zone), the northwestern arid region was divided into two zones (moderate temperate arid zone and warm temperature arid zone). Qinghai-Xizang Plateau was also divided into two zones (plateau frigid zone and plateau temperate zone), then, based on topography and landscape, China was further divided into 37 regions (21 in the east, 12 in the northwest and 4 in the Qinghai-Xizang region).

Based on the strength of the above-mentioned regionalizational schemes, the author's practical experience in traveling around the country for many years and the practical experience he received from writing the book "A Summary Discussion of China's Physical Geography," a new scheme for regionalization is proposed as follows.

II. Principle of Comprehensive Physical Regionalization and a System for Unit Classification

The first step in the work of comprehensive physical regionalization is to draw up a regional unit classification system which will fully reflect the differences and similarities of physical environments. We have mainly considered the following three principles:

(A) The principle of integrating comprehensive analysis and dominant factors.

The natural world is a composite entity. We must integrate regional factors with nonregional factors, external factors with internal factors, contemporary factors with historical factors, conduct comprehensive analysis and adopt the method of overlapping. By overlapping distribution maps and regional maps of natural phenomena, certain patterns will emerge. The lines with the most overlap will be selected as the boundaries for comprehensive physical regionalization. Since natural phenomena are interrelated, this method can be adopted in certain areas. However, since different phenomena have their own development patterns and development stages, and scientific data in many parts of China is incomplete, this method cannot be fully used to draw up comprehensive physical regionalization and boundaries for the unit system.

In addition, nature is a complete entity with close internal relations. Change in one factor usually leads to change in other physical factors, or even to change throughout the entire entity. In particular, changes in one

dominant factor will surely lead to changes in other factors and the entire entity. Generally speaking, climate (chiefly temperature, humidity and rainfall) and topography (chiefly the absolute altitude and relative altitude) are the two basic factors in the physical environment, and soil and vegetation are two clear "mirrors" reflecting the physical environment by studying one or several of these dominant factors. This work will facilitate judging the quality and quantity in the drawing of regional boundaries.

(B) The principle of dividing different levels.

Since the similarities and differences of regional units are relative, there should be different levels, ranging from high to low, in the system of regionalization, with the similarities of each unit division increasing as levels ascend. However, to facilitate application and avoid complication, and due to inadequate contemporary scientific data, there should not be too many levels in the national comprehensive physical regionalization. This article has temporarily adopted the three-level regionalizational system: natural realm, natural division and natural region. The entire country is divided into 3 natural realms, 7 natural divisions and 33 natural regions. Natural regions with more scientific data can be further divided into the fourth level of natural subregions. Natural area, the fifth level, also the lowest level in comprehensive physical regionalization units, will not be used in the national regionalization.

(C) The principle of mainly serving agriculture.

The principal goals for conducting comprehensive physical regionalization are: (1) to understand the basic physical conditions of different regions; (2) to evaluate the natural resources potential of different regions, to provide a scientific basis for the exploitation and utilization of the physical environment with regional features in mind; (3) to examine the advantages and disadvantages of different types of physical conditions, especially the study of natural disasters, to provide basic data for their prevention and control and to transform unfavorable conditions. At present, China is an agricultural country. The agricultural population accounts for 84 percent of the total population. Agricultural production and natural geographical conditions are closely bound with each other. The higher the technological level of agricultural production, the more necessary it is to carry out comprehensive physical regionalization. Therefore, at present, China's comprehensive and comprehensive agricultural regionalization, physical regionalization should primarily serve agriculture. The proposed regional classification system and indices should be those closely related with agricultural production, such as temperature, humidity, rainfall, vegetation and soil, which are the factors for major and minor differences in the physical environment. It should be noted here that comprehensive physical regionalization to serve agriculture must emphasize both the present benefits and long-term needs. Therefore, the regional classification unit system and regional boundaries must be demarcated by differences in present land utilization and also be considered from the point of view of future rational utilization and natural transformation.

In addition, when we draft China's regional classification unit system, we should pay close attention to making it correspond to the regionalization of

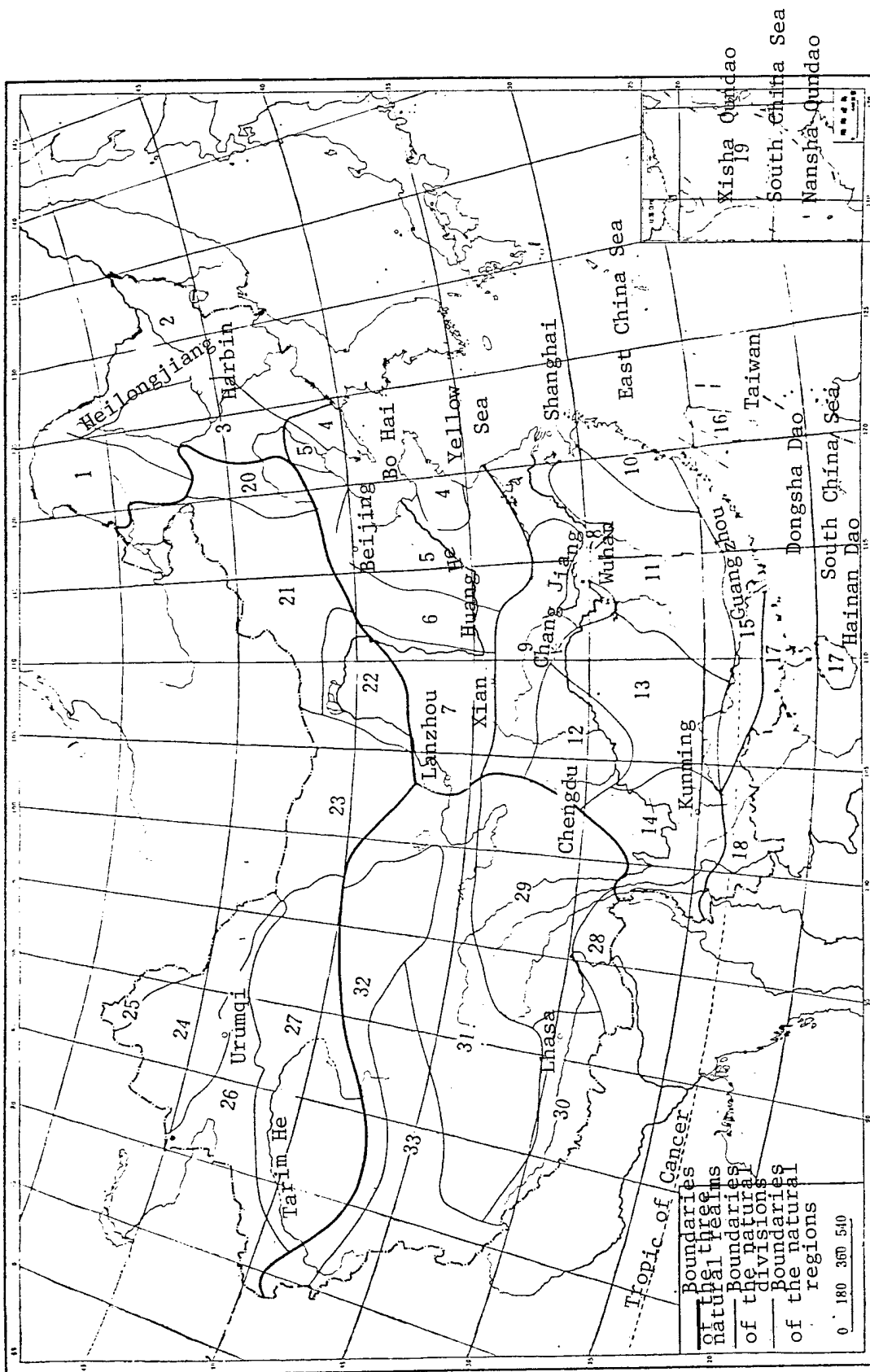


Fig.1 A new scheme for comprehensive physical regionalization in China

our Asian neighbors and other countries of the world, so that comparisons can be made.

III. Three Natural Realms

Based on the major regional differences in China's geographical conditions which are (1) the differences in geographic location, such as latitude and distance from the sea; (2) the differences in topography and in the new tectonic movement; (3) the differences in climate; (4) the main differences in the evolution of natural history; and (5) the impact of human activity on nature as well as differences in the development, exploitation and transformation of nature. In this scheme, China is divided into three natural realms, Eastern Monsoon China, Northwest Arid China and the Tibetan Frigid Plateau. These are the first level units in China's comprehensive physical regionalization. Their major features are summarized as follows:

(A) Eastern Monsoon China

This is part of the Asian Monsoon Region, which has more than half of the world's population. It includes about 45 percent of China's total land area and 96 percent of China's total population. Its boundary with the northwest arid China is the isopleth of 1.2-1.5 aridity level. Its boundary with the Tibetan Frigid Plateau is the 2,500-3,000 meter contour. The major features of this region are:

(1) First, the humid monsoon climate has a predominant position. The aridity level of most parts of the realm is below 1.0 (1.0-1.5 in some parts). There is notable seasonal change in wind direction and amount of rainfall. In summer, the monsoon has an obvious effect.

(2) The extent of emergence during the new tectonic movement was not great. There are not many mountains with an elevation higher than 2,000 meters. There are no contemporary glaciers, and most surfaces are 1,000 meters below sea level. The area east of the Qinzhou-Zhenzhou-Beijing-Oupu line was mainly formed by submergence during the new tectonic movement era with an elevation below 500 meters in most parts. There also are extensive alluvial plains.

(3) The chief formation forces of landforms are normal weathering, shifting, water erosion, deposition and corrosion. There are abundant resources of surface water, which are replenished mainly by rainfall. There is a large volume of phreatic water.

(4) Forests are the main natural vegetation, and prairies are found in some parts of the realm. Since the Fourth Ice Age did not have extensive and strong glaciation, vegetation and animal-life only suffered minor injury. Therefore, there are a great variety of living organisms and the soil and other loose surface materials have not been destroyed by glaciers.

(5) The impact of humans on nature is extensive and impressive. All arable land has been turned into farmland (except for Heilongjiang Province and a few other areas). Most natural forests no longer exist. Regardless of the past, the present or the future, this region is China's major agricultural region.

(6) The major difference within the region is the change of temperature due to change in latitude. But in the northern and northeastern region, the decrease of humidity level following the increase of distance from the sea coast is also an important factor for differences.

(B) Northwest Arid China

This is part of the extensive prairie and desert areas which stretch across Eurasia. It accounts for approximately 30 percent of China's total land area and 3 percent of China's total population. Its boundary with the Eastern Monsoon China is the above-mentioned isopleth of 1.2-1.5 aridity level. Its boundary with the Tibetan Frigid Plateau is the series of mountain ranges including Kunlun Shan, Altun Shan and Qilian Shan. The main features of this region are:

(1) It is located inland, and is surrounded by mountain ranges. In summer, it is hardly influenced by the monsoon. Its climate is mainly semi-arid (aridity 1.5-2.0) and arid (aridity level higher than 2.0). Annual rainfall is below 400 mm (semi-arid) and 200 mm (arid). Usually, there is no rainfall for 6 months.

(2) There was notable difference of emergence in the recent geological age. Emergence in most areas is not great, forming plateaus and inland basins with an elevation about 1,000 meters. But emergence in some areas is great, forming mountain ranges stretching across plateaus and surrounding plateaus and inland basins. Tian Shan has an elevation above 3,500 meters. Altun Shan has an elevation about 3,000 meters. In the plateaus and inland basins, there are some areas with lower altitudes. For example, the center of Turpan Basin is only 155 meters above sea level, the lowest land surface in China.

(3) The major forces affecting landforms are weathering, shifting, water erosion and deposition and extensive wind erosion, wind migration and wind deposition, with deserts everywhere. Most rivers are landlocked, and most surface runoff found in level areas is temporary runoff originating from torrential rain. There are quite a few lakes, but most of them are salty. Mountain runoff is the major water resource of this region, the sources for replenishment are rainfall and melting snow and ice.

(4) The semi-arid and arid climate gradually formed after the Mesozoic Era. The present vegetation is the result of gradual drying out of vegetation in the mountain areas. There are fewer varieties of vegetation and animals than Eastern Monsoon China.

(5) The human impact on the environment is far less extensive than that of the Eastern Monsoon China. But in areas where water is present and irrigation is possible, many fertile and densely populated oases have developed. Arid prairies have been a good husbandry area since ancient times, and in the last 200 years, an extensive semi-agricultural semi-husbandry zone has been developed on the southeastern border.

(6) The major factor for differences within the region is the aridity level. The region can be divided into arid and semi-arid, and then into temperate zones and warm temperate zones.

(C) Tibetan Frigid Plateau

This is the world's largest, highest and most recently formed plateau. It has about 25 percent of China's total land area and 0.8 percent of China's population. Its main features are as follows:

(1) First, the whole region emerged during the most recent age. There was a disparity in the emergence of some areas which formed a great plateau with an average elevation of above 4,000 meters and many snowcapped mountains with an elevation between 7,000 meters and 8,000 meters. The vertical division of zones is noticeable.

(2) It is of high elevation, with thin air, low temperatures, scattered frozen earth, strong wind and strong solar radiation.

(3) The major forces affecting landforms are strong physical weathering, shifting, transportation and deposition by glacial movement and running water. The effect of modern glaciers and glaciers of the Fourth Ice Age is extensive. Most parts of the region are inland drainage areas, with many lakes.

(4) There are many varieties of flora and fauna. The surface flora are mainly grassland, grassy marshland and shrubs, with few forests. The land, being of poor quality and young age (begun after the retreat of the Fourth Ice Age), is slow to form soil. Its development is very weak and the layers are thin.

(5) Unfavorable natural conditions have imposed great restrictions on human production and livelihood. It has a low population density, the impact of human activity is less than that of the Northwestern Arid China.

(6) Regional differences are mainly due to vertical distribution and the change of water availability from the southeast to the northwest, it can be divided into humid, semi-humid, semi-arid and arid regions.

IV. Seven Natural Divisions

Based on the above-mentioned three regions, China can be divided into seven natural divisions. A natural division is an extensive area where temperature, humidity, rainfall, soil and vegetation are roughly the same across the entire area. As for the exact demarcation, temperature, humidity, rainfall and dominant regional differences are indicators. We have selected three names, geographic location, moisture and temperature zones.

In Eastern Monsoon China, the major differences are latitude position and temperature zone. Four natural divisions can be divided from the north to the south: (1) Temperate humid and subhumid Northeast China (the cold temperate zone is included here because of its small area); (2) Warm-temperate

humid and subhumid North China; its boundary with the above-mentioned temperate zone is the isotherm of 3,200°C in temperature accumulation (cumulative temperature below 10°C); (3) Subtropical humid Central and South China; its boundary with the above-mentioned warm temperate zone division is the isotherm of 4,500°C cumulative temperature, or the isotherm of 0°C for the average January temperature (approximately equal to the Qinling-Huaihe line); (4) Tropical humid South China (including the equatorial zone), its boundary with the subtropical zone division is approximately the isotherm of 7,500°C cumulative temperature, or the isotherm of 16°C for the average temperature in January.

In Northwest Arid China, the major difference within the region is the distance from the sea and the resulting differences in water content and vegetation. It can be divided into two natural divisions from the east to the west, which are (5) temperate grassland of Inner Mongolia and (6) temperate and warm temperate desert of Northwest China. The boundary of these two divisions is the line formed by Helan Shan and Liupan Shan.

In the Tibetan Frigid Plateau, the major difference is terrain and resulting differences in zones. Because of insufficient scientific data, it is divided into only one division, which is the (7) Tibetan Plateau.

It must be pointed out here that the division of the above seven natural divisions have not been unanimously agreed upon and there are conflicting opinions in some areas. For example, in 1959, the Physical Regionalization Committee of the Chinese Academy of Science divided China into 18 divisions and subdivisions, and it is still not certain whether the boundary semi-arid and arid zones (or grassland and desert) should be by the line of Helan Shan and Liupan Shan (the boundary between desert and desert grassland) or by the line of Wendouermiao-Bailingmiao-Etuokeqi-Yanchi (the boundary between desert grassland and arid grassland).

V. 33 Natural Regions

In 1959, the Physical Regionalization Committee of the Chinese Academy of Sciences classified 18 natural divisions (subdivisions) as the first level in China's comprehensive physical regionalization classification units (three natural realms and six temperature zones are the zero level units) and the 28 natural zones (subzone) whose major division indicators are regional factors such as climate, flora and fauna and soil as the second level classification units. Both of these two are major classification units. Each natural zone (subzone) includes a soil and vegetation group which represents different features and types of soil. There are also climatic similarities in the composition of temperature, moisture, land utilization and natural transformation. The division of natural zones (subzones) has important significance in scientific knowledge and production. However, in order to simplify the regionalization classification unit system and to unify regional factors and nonregional factors in the higher level units so as to more fully reflect the nature of the regions objective substances, this scheme, at the present time, only adopts a three-level division, which are realm, division and region, and omits the temperature zones and natural zones. Based on the 3 realms and 7 natural divisions, 33 natural regions are divided. The division of natural regions is

based on comprehensive indicators differentiated by regional factors, i.e. climate-organisms-soil, and nonregional factors, i.e. landform-composition of the land surface-hydrology and geology, so as to better reflect the direction of land utilization and natural transformation. Therefore, this is a major classification unit in China's comprehensive physical regionalization. As for the names, landforms and major vegetations are adopted. The 33 natural regions are listed in Table 2 and map 1.

VI. The Lower Level Units in Regionalization

Under the level of natural regions, subregions (the fourth unit in this scheme's regionalization) can be divided according to the major characteristics of nonregional factors, i.e. landforms and composition of the land surface, and their reflection by regional factors, i.e. climate-organisms-soil. The natural environment, land utilization and the direction of transformation will be more consistent in the same natural subregion. The division of subregions will have more practical significance in provincial (district) comprehensive physical regionalization, comprehensive agricultural regionalization and comprehensive economic plans. Because scientific data in some parts of China is inadequate, the division of natural subregions cannot be carried out at the present time in some natural divisions (e.g. Tibetan Plateau natural division). In the manuscript of "The Discussion of China's Physical Geography," a trial division of natural subregions is carried out in the other six natural divisions. For example, the 5 natural regions in the warm temperate and temperate desert of Northwest China are divided into, 14 natural subregions, as listed in Table 3.

The lowest level unit in the regionalization (natural small region, or the fifth level unit in regionalization) can be integrated with the division of landform types throughout the country. In scientific concepts, "land" is the vertical section of a certain sector of the land surface including all natural elements such as geology, landforms, climate, moisture, soil and vegetation. It also includes the past and the present interaction between human activity and geographical conditions. Landforms and natural districts representing a composition of different physical features are two sides of the physical entity. They supplement each other and differentiate from each other. The second level (or basic) land types have similar landforms, soil types and vegetation on a small scale. Their production potential are basically the same. The first level land types are combined with the second level land types. They have identical landforms, types of soil and variety of vegetation. Within certain natural regions or subregions, the first level land types can be combined into a natural small region--the lowest level unit (or basic unit) in comprehensive physical regionalization. As for the question of linking China's low level units in regionalization with the division of land types, further research is needed. This is the future direction for China's physical regionalization and land division work.

Table 1. Seven Natural Divisions of China and Their Chief Climatic Indices

Realms	Natural divisions	Cumulative temperature (C)	Aridity level*	Frost free period (days)
Eastern Monsoon China	Temperate humid and subhumid Northeast China	1,400 - 3,200°C	0.5 - 1.2	<145 days
	Warm temperate humid and subhumid North China	3,200 - 4,500°C	0.5 - 1.5	150 - 200 days
	Subtropical humid Central and South China	4,500 - 7,500°C	0.5 - 1.0	230 - 330 days
	Tropic humid South China	27,500°C	0.5 - 1.0	whole year
Northwest Arid China	Temperate grassland of Inner Mongolia	2,000 - 3,000°C	1.2 - 4.0	<180 days
	Temperate and warm temperate desert of Northwest China	3,200 - 4,500°C	>4.0	about 200 days
Tibetan Frigid Plateau	Tibetan Plateau	<3,200°C vertical change	0.5 - 4.0 vertical change	<130 days

*Aridity level was first adopted in 1959 in the book "China's Comprehensive Physical Regionalization," and is calculated by the following formula:

$$I = 0.16 \frac{\sum t \geq 10^{\circ}\text{C}}{\sum r \geq 10^{\circ}\text{C}}$$

I is the aridity level; $\sum t \geq 10^{\circ}\text{C}$ is the cumulative temperature during the period of $\geq 10^{\circ}\text{C}$, represented by $^{\circ}\text{C}$; $\sum r \geq 10^{\circ}\text{C}$ is the amount of rainfall during the period of $\geq 10^{\circ}\text{C}$, represented by millimeters; 0.16 is a constant in China's condition.

Table 2. 33 Natural Regions of China

Realm	Natural Divisions	Natural Regions
1. Eastern Monsoon China	1. Temperature humid and subhumid Northeast China	1. Coniferous forest region in Daxinganling
		2. Coniferous and broadleaf mixed forest region in the northeastern mountain region of China
		3. Forest and grassland region in the Northeastern Plain
	2. Warm temperate humid and subhumid North China	4. Broadleaf deciduous forest region in Liaodong and Shandong Peninsula
		5. Broadleaf deciduous forest region in the Northern Plain
		6. Broadleaf deciduous forest and grassland regions in Shanxi-Hebei mountain region
	3. Subtropical humid Central and South China	7. Forest grassland and arid grassland region in the Yellow Plateau
		8. Mixed forest in the middle and lower valley plains of the Chang Jiang, the northern subtropical zone
		9. Mixed forest region in Qinling, Daba Shan, the northern subtropical zone
		10. Evergreen broadleaf forest region along the Zhejiang and Fujian coast, the central subtropical zone
		11. Evergreen broadleaf forest region in the hills and plains on the south bank of the Chang Jiang, the central subtropical zone
		12. Evergreen broadleaf forest region in the Sichuan Basin, the central subtropical zone
		13. Evergreen broadleaf forest region in Guizhou Plateau, the central subtropical zone
		14. Evergreen broadleaf forest region in Yunnan Plateau, the central subtropical zone
		15. Evergreen broadleaf forest region in Lingnan hilly region, the southern subtropical zone
2. Northwest Arid China	4. Tropical humid China	16. Green broadleaf and rain forest region on Taiwan Island, tropical and the southern subtropical zone
		17. Monsoon forest region in Hainan
		18. Monsoon forest region in southwestern Yunnan
	5. Temperate grassland of Inner Mongolia	19. Monsoon forest and rain forest region in the islands in the South China Sea
		20. Arid grassland region in the Xiliao River valley
		21. Arid grassland and desert grassland regions in Inner Mongolian Plateau
	6. Temperate and warm temperate desert of Northwest China	22. Arid grassland and desert grassland region in E'erdusi Plateau
		23. Temperate desert region in Alashan Plateau
		24. Temperate desert region in Zhungeer Basin
	7. Tibetan Plateau	25. Mountainous grassland and coniferous forest in A'ertai Shan
		26. Mountainous grassland and coniferous forest in Tian Shan
		27. Warm temperate desert in the Tarim Basin
3. Tibetan Frigid Plateau		28. Mountainous forest region in the southern slope of the Himalaya Mountains, tropical and subtropical zones
		29. Mountainous coniferous and mountainous marshland regions in the southeastern part of Tibetan Plateau
		30. Mountainous shrub and grassland regions in southern Xizang
		31. Frigid grassland and mountain grassland in the central part of Tibetan Plateau
		32. Desert region in the northern side of Chaidamu Basin-Kunlun Shan
		33. Mountainous desert and desert grassland in Ali-Kunlun Shan

Table 3. 14 Natural Subregions of Northwest China

Natural Divisions	Natural Regions
23. Temperate desert region of Alashan Plateau	23. (1) Alashan Plateau 23. (2) Ma zong mountain area 23. (3) The central and eastern section of the Hexi Corridor
24. Temperate desert region of Zhungeer Basin	24. (1) Zhungeer Basin 24. (2) Nuoming Desert 24. (3) Feming Valley
25. Mountainous grassland and coniferous forest region of A'ertai Shan	25. (1) The northwestern part of A'ertai Shan 25. (2) The eastern part of A'ertai Shan
26. Mountainous grassland and coniferous forest region of Tian Shan	26. (1) The central part of Tian Shan 26. (2) The eastern part of Tian Shan 26. (3) Yili Valley
27. Warm temperate desert region of the Tarim Basin	27. (1) Tarim Basin 27. (2) Tulufan-Hamijianshan Basin 27. (3) The western section of the Hexi Corridor

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APPLIED SCIENCES

NEW BREAKTHROUGH IN COMPUTER INDUSTRY REPORTED

Shenyang LIAONING RIBAO in Chinese 20 Jul 83 p 1

[Article by Wang Xiaomeng [3769 2556 1125]: "High-Grade Mini All-Purpose Digital High-Grade Computer Successfully Manufactured in Jinzhou"]

[Text] The Jinzhou Electric Computer Plant, the Qinghua University and the second branch of Beijing Institute of Technology have jointly manufactured a model DIS142 mini all-purpose digital high-grade computer. These computers are being produced in small lots and formally put to use.

Not long ago, the Computer Industry Administration Bureau of the Ministry of Electronics Industry and the provincial electronics industry bureau invited more than 100 computer experts, professors, lecturers and engineers for an appraisal, and they held that the successful manufacture and application of this computer signalled a new breakthrough in the utilization of international know-how and the development of computer industry.

In addition to the new technology in the design of microprogramming popularly adopted in foreign countries, such new technology, new techniques and new components as PLA microprogramming control, high-capacity semiconductor storage device, high-capacity magnetic disc and high-density magnetic tape drive have also been boldly introduced in this computer. With fine performance and reliability, it can be extensively used for automatic drafting in large high-speed electrical devices, for the processing of remote-sensing, pictures and signals, and of oceanic weather data, and for multiuser teaching and computerizing systems. It is so far the best multifunctional minicomputer produced in China.

The research workers and engineers have worked with persistent effort since they accepted the task of manufacturing these computers in 1981, and in September 1982, the first sample unit was successfully trial-produced. The four units used by consumers last year have proved to be satisfactory. By using the DIS142 computer, the Space Science Technology Center of the Chinese Academy of Sciences has found the speed of operation to be 10 times faster than by using the former low-grade computers. The Longjiang Instrument and Meter Plant in Harbin has used this computer as the central processing unit in their drafting system. The property of diagrams and quality of lines are up to the advanced standards of similar foreign products. In future, there will be no need to spend huge sums of foreign exchange in purchasing these products.

APPLIED SCIENCES

PERFORMANCE OF HOME-PRODUCED COMPUTERS EVALUATED

Beijing JISUANJI SHIJIE [CHINA COMPUTERWORLD] in Chinese No 8, 20 Apr 83 p 1

[Text] In 1982, the Computer Industry Administration Bureau of the Ministry of Electronics Industry conducted a centralized national test on various types of home-produced computers. The result of test showed the fine quality of the majority of computers produced in our country. Apart from several individual components which should still be imported, China is now able to produce all the rest.

During the test, 21 types, produced by 11 factories, were found to be of fine quality. These products were: Model BY-8102 (clock type) of the Beijing Computer No 2 Plant; Model CS-2115C (desk type) and Model E1-5100C (pocket-size function type) of the Beijing Computer No 5 Plant; Model KK-315F (pocket-size type) of the Tianjin Radio No 13 Plant; Model DS-5 (pocket-size function type) of the Dalian Radio Plant; Model X-1200 (desk-type) and Model X-8003 (Pocket-size function type) of the Tianjin Electronic Computer Plant; models BL-815 (pocket-size function type), BL-809 (pocket-size type), BL-301 (pocket-size type), BL-857 (pocket-size type) and BL-802 (pocket-size type of the Fujian Electronic Computer Plant; Model 816 (pocket-size clock type) of the Guizhou 4292 Plant; Model DS-781 (pocket-size type of the Shaoyang Radio Plant; Model SS-53A (pocket-size function type) and Model SS-53B (pocket-size function type) of the Jiangxi 502 Plant; Model FX-502 (pocket-size function type), Model KC-132 (pocket-size type) and Model KC-101 (pocket-size type) of the Guangzhou Telecommunications Supplies Plant; and Model 121A (pocket-size type) of the Guangzhou 750 Plant.

The test also revealed certain problems with the quality of home-produced computers. The plants producing complete processing units and the plants producing components have pledged to cooperate with one another in tackling the key problems in order to further improve the quality of home-produced computers.

9411

CSO: 4008/181

APPLIED SCIENCES

MODEL 1011 CHINESE CHARACTER AUTOMATIC TYPEWRITER

Shanghai DIANZI JISHU [ELECTRONIC TECHNOLOGY] in Chinese No 6, 1983 pp 41-42

[Article by Wang Ziting [3769 3320 1656]]

[Text] The Model 1011 Chinese character automatic typewriter, a jet-ink printer with numerically coded characters, possesses the following features:

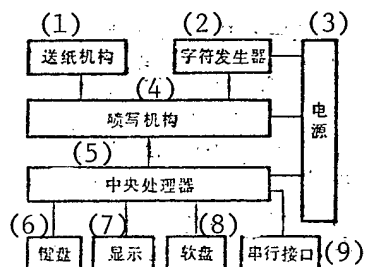
1. The numerical coding of the Chinese characters which rests on the relationship between character shape and sound joins together the numerals and the character. It is very easy to learn. The numerical span is very short, no more than four numerals per character. In spite of speedy input, there are very few duplicates, and the machine is equipped with a duplicates processor.
2. The jet-ink printing process is a noiseless energy-saver and does not require any specific kind of paper.
3. It types both Chinese and English in clean beautiful typeface.
4. The character symbol generator compresses the message and reduces storage space to a minimum.
5. Its capability to add new characters (Chinese characters not included in the character symbol generator) eliminates the possibility of omissions.
6. It is compact, light and easy to carry.

A. Basic Principles

As shown in the structural diagram of the Model 1011 Chinese character automatic typewriter, its basic function is to process the numerical input by the keyboard to obtain the corresponding cable code numbers and internal structural numbers which are then structured in dot formations of Chinese characters or English letters for printing or display.

The Model 1011 typewriter central processor which covers the systems control, input processing, and controls over the keyboard and the disk is an Intel 8085K microcomputer containing a 10K character cuts working storage, an 1K character cuts storage for display, a 72K character cuts microprocessing storage, a jet-ink printing port and a diagnostic port. The working storage

is an input buffer capable of storing about 3,500 Chinese characters or 7,000 English letters which may be processed freely, or transported to the disk for permanent storage. The 2.5-inch disk is a magnetic storage with 8K character cuts capacity, and the disk films are interchangeable. The disk stores not only the input texts but also some 100 programmable new characters to expand the working capacity of the typewriter, whenever needed. The six Chinese characters displays are used for demonstrating the input texts or processed texts, and to help the operator, prior to printing, eliminate typographic errors or the Chinese characters selected for use during the duplicates processing.



Structural Diagram of Model 1011 Chinese Typewriter

Key:

- | | |
|--------------------------------|-----------------------|
| (1) Character symbol generator | (5) Central processor |
| (2) Paper dispatch | (6) Keyboard |
| (3) Power source | (7) Display |
| (4) Jet-ink printer | (8) Disk |
| | (9) Serial port |

The character symbol generator of the Model 1011 machine consists of an Intel 8085A microprocessor, a 2.25K character cuts RAM, a 92K character cuts micro-processing storage and a jet-ink printing port. It produces dot formations of Chinese characters of English letters to be printed by the jet-ink printer which consists of an ink-jet, a transmission system and a circuit control.

The serial port of the Model 1011 machine is a data communication port consisting mainly of an Intel 8251 synchronized/asynchronized input/output communications element, and an Intel 8253 programmable timer. It can turn the parallel data on the Model 1011 main data line into serial data which it outputs after start, stop, and odd-even checking. It can also turn the serial data it received into corresponding parallel data which it transports to the Model 1011 machine for processing and printing. The Model 1011 machine has a voltage type standard connector. Serial data may be transmitted by using EIA RS 422 (duplex or semiduplex) or CCITT V24/V28(EIA RS232C) connector which transmits at a maximum speed of 9.6K/sec.

B. Technological Specifications

The principal technological specifications of the Model 1011 Chinese character automatic typewriter are as follows:

1. Input in symbols (Zhima 2388 4316) or the Chinese cable code numbers.
2. (The main keyboard is arranged like an English keyboard.
3. The character symbol generator contains 4,096 Chinese characters with room for about 100 additional programmable new characters.
4. The Chinese characters are in 24 x 24 dot formation. A character 3.2mm in height is 3.6mm or 4.6mm in width. A character 6.3mm in height is 7.2mm or 8.8mm in width.
5. English letters are in 24 x 15 dot formation. A letter 2.4mm in height is 2.54mm in width, and the scale may be altered according to the ratio.
6. There are four kinds of between-line spacing: 4.23mm, 6.35mm, 8.47mm and 10.58mm. When the character height is 3.2mm, the error in between-line spacing is 0.1mm. When the character height is 6.3mm, the between-line spacing is 0.2mm.
7. The maximum width of paper used is 315mm, and the maximum length of a typed and printed line is 290mm.
8. The type-print speed is 13 Chinese characters/sec or 100 English letters/sec.
9. The power source voltage is 220 volts ± 10 percent, frequency 48~60 hertz, and power consumption 100 watts.
10. The environmental temperature is 5~40°C.
11. Its outer dimension is 590 x 310 x 560 (mm), weighing 20 kg.

C. Application Functions

The Model 1011 Chinese character automatic typewriter, a computerized typewriter, performs the following functions:

1. Type-print patterns: Chinese patterns, English patterns and combined patterns.
2. Type-print styles: casual writing, margining, automatic advance, setting, centering, underlining, indentation, form setting, and adjustment of spacing between characters (words) and lines.
3. Word processing: input, change, adding, deletion, change of paragraphs, and automatic spotting.
4. Display: Delayed type-print following display or display only, and simultaneous type-print and display.
5. Generating new characters.

6. Disconnection/connection capabilities.
7. The capability to maintain data during turning off, loss of power or transport.
8. Diagnosis, operational instructions, and error warning.

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CS0: 4008/162

APPLIED SCIENCES

BRIEFS

CODING PROGRAM FOR CHINESE CHARACTERS--Zhengzhou, 14 Sep (XINHUA correspondent Chen Chaozhong)--A newly-developed coding program allows a computer technicians using a 26-key keyboard to call up 7,000 Chinese characters. About 400 programs have been developed so far to encode Chinese characters for computer use. This one is based on five strokes and four basic shapes. Speed of use is about 100 characters a minute. At a meeting attended by 40 experts from 26 to 29 August in Zhengzhou, Henan Province, the program was appraised as one of the most advanced of its kind in China and abroad for its simplicity and practical value. The program was developed by Wang Yongmin, a 1968 graduate of China's University of Science and Technology and now an engineer in the Nanyang Science and Technology Committee, Henan Province. [Text] [OW140328 Beijing XINHUA in English 0251 GMT 14 Sep 83]

MONGOLIAN LANGUAGE COMPUTER--A computer software system designed by China to analyze the Mongolian language has passed inspection in Hohhot on 27 September. The system includes programs for language analysis, dictionary compiling, and vocabulary arrangement according to the frequency of occurrence. The system was developed by scientific and technological workers of the Mongolian information section under the electronic computer center of the Scientific-Technological Commission of Nei Monggol Autonomous Region in cooperation with the Mongolian Language Research Center of Nei Monggol University. [Summary] [OW301001 Beijing Domestic Service in Chinese 0900 GMT 29 Sep 83]

SICHUAN DEMOLITION TECHNOLOGY--Chengdu, 27 September (XINHUA)--A new demolition technology will be marketed by a service corporation in Chengdu, Sichuan Province, according to provincial authorities. The new demolition technology uses a chemical powder which is made into a paste with water and then put into holes drilled into the structure to be demolished. The expansion of the mixture causes the structure to collapse with little vibration, noise or dust. The corporation will market the technology, the chemical mixture and will also train technicians. Xu Ning, senior engineer of the No 2 Engineering Bureau of the Ministry of Railways who has made great contributions to the development of demolition techniques, has been invited to be advisor and director of the corporation's technical research department. [Text] [Beijing XINHUA in English 0835 GMT 27 Sep 83 OW]

SICHUAN'S PURCHASING-MARKETING COMPUTER--The Sichuan Provincial Grain and Oil Purchasing and Marketing Corporation has successfully trial manufactured the first computer for the purchasing and marketing of grain oil. This computer already played a good role in this year's summer procurement. The procurement personnel need no longer worry about memorizing the many different prices of grain and oil, while the peasants are no longer required to wait in long lines for their grain and oil to be sold. In the procurement of grain and oil, this computer can work out the prices in procurement and above-quota procurement, store the results, and release them to be used at any time. [Text] [Harbin HEILONGJIANG RIBAO in Chinese 8 Jul 83 p 4] 9411

CSO: 4008/181

Engineering

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TITLE: "The Stability Measurements of Sensitivity of 711-Radar Receiver"

SOURCE: Nanjing NANJING DAXUE XUEBAO [JOURNAL OF NANJING UNIVERSITY] in Chinese
No 2, 1983 pp 382-387

TEXT OF ENGLISH ABSTRACT: We have continuously measured the stability of the receiver sensitivity of the 711-radar (made in China) for a long time. In addition, we have compared the results of the measurements obtained by using two different apparatuses--noise signal generator and standard signal generator.

The results show that the receiver of the 711-radar has high stability in its sensitivity, the the results from two different apparatuses are basically in agreement. The noise signal generator is superior in the measurement of the sensitivity stability.

The results obtained by the standard signal generator are not as good as those obtained by the noise signal generator. For this reason, some experiments and discussions are presented.

9717
CSO: 4009/224

Mineralogy

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TITLE: "Discovery of Polyspaerite in China"

SOURCE: Guiyang KUANGWU XUEBAO [ACTA MINERALOGICA SINICA] in Chinese No 2, 1983 pp 148-152

TEXT OF ENGLISH ABSTRACT: Polyspaerite was discovered for the first time in China. It was analyzed by electron microprobe with apatite and PbO as standards, and was corrected by the ZAF method, and it was determined that it contains PbO 70.15, CaO 6.40, SiO₂ 1.17, Al₂O₃ 1.21, MgO 0.35, P₂O₅ 17.44 and Cl 3.01 (percent). The calculated chemical formulas is: (Pb 3.7063 Ca 1.3406 Σ 5.049 (PO₄) 2.8892 Cl 1.0000. X-ray diffraction data are: unit-cell parameters: $a_0 = 9.9291 \text{ \AA}$, $c_0 = 7.0540 \text{ \AA}$, $Z = 2$; crystal system: hexagonal; space group: $P6_3/m$; and theoretical specific gravity: $D_x = 6.47$. The strongest lines in its powder diffraction pattern are: 4.20(4), 4.02(6), 3.21(6), 3.10(8), 2.915(10), 2.810(5), 2.025(4), 1.972(6) and 1.928(4).

The polyspaerite occurs as irregular grains with a grain size of about 0.07 x 0.03 mm. It also occurs as fine-grained aggregates, and hexagonal prismatic microlites can be seen on the aggregate surface. It is yellowish green or orange with an oily luster, while its powder appears to be white with a slight yellowish

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tint. Due to its high refractive index and extremely fine grain size, it is rather difficult to make an accurate determination of its optical constants. The results obtained are: $N_g' 2.027$, $N_p' 2.001$, biaxial (-) with smaller $2V$. The specific susceptibility (h) of this mineral is $0.002 \times 10^{-6} \text{ CGSM mm}^3/\text{g}$. Hardness: $H = 3.4$.

The mineral was found in veinlets within mica-bearing pyroxenolites in the bordering region at Loding in Guangdong Province. The veinlets are generally 0.5 - 20 cm wide and several meters long. The basic mica-bearing pyroxenolite occurs as a dyke intrusive along the Qiangjinwan fault on the south flank of an inverted syncline. The dyke is 1 km long and 60-115 meters wide. The polyspaerite closely coexists with vanadinite and pyromorphite. The associated minerals also include limonite, ilmenite, chromite, pyrite, rutile, zircon and apatite.

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TITLE: "Advances in Nomenclature of New Minerals Found in China and Modification of the Translated Names of Minerals Discovered Abroad in the Past Two Years"

SOURCE: Guiyang KUANGWU XUEBAO [ACTA MINERALOGICA SINICA] in Chinese No 2, 1983
p 156-157

ABSTRACT: No new minerals were found in China until the 1950's and, although now more and more are being discovered every day, for a long time China's mineral names and translated mineral names have been in a relative state of disarray, making things difficult for researchers, teachers, etc. In June 1981, the First New Minerals and Mineral Naming (Translation) Symposium was held in Hangzhou, and one year later the second symposium was held in Beijing. These led to the publishing of the English-Chinese Minerals Glossary, a collection of approximately 2600 minerals from 1980 and earlier. New minerals found from 1981 on will have their names determined by the New Minerals and Mineral Names Committee (founded August 1981) of the Chinese Geological Society, and these will be announced at regular intervals. The following 12 minerals were found in China in the last two years and their names have already been approved by the IMA [International Mineralogical Association]: Dabaite, Leadamalgam, Qingheite, Hingganite, Jinshajangite,

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Daqingshanite, Nature Chromium, Tetraauricupride, Carbochromite, Xilingolite, Xitieshanite, Yimengite.

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